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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,232	12/06/2001	Ross A. Donelly	SNSY-A2001-007	2984

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EXAMINER

DIMYAN, MAGID Y

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/016,232

Applicant(s)

DONELLY ET AL.

Examiner

Magid Y Dimyan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-18 is/are allowed.
- 6) ☒ Claim(s) 1-11, 19-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Acknowledgement***

Receipt is acknowledged of the Amendment in Response to the First Office Action, filed August 15, 2003. It is also acknowledged that the Applicants have amended all (twenty) claims, without adding new subject matter.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1 – 11 and 19 - 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Groeneveld et al (hereafter, Groeneveld) – U.S. Patent No. 6,230,304.
2. Referring to claim 1, Groeneveld teaches a method for placing circuit elements on an IC comprising (a) placing cells of a first circuit design by use of a non-direct timing

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driven layout processes (see Fig. 2; column 10, lines 23 – 37); (b) providing routing information of the cells (see column 1, lines 20 – 35); (c) performing incremental placement of cells (see column 16, lines 11 – 27; also see Fig. 2); (d) placing cells by use of timing driven placement processes and iterating as claimed herein (see again Fig. 2; column 3, lines 18 – 24).

3. As per claim 2, see column 9, lines 20 – 49, which cite the estimation of net lengths and global routes or global optimization of the layout. See also column 15, lines 7 - 14 which teach how the routing areas can be enlarged as necessary to achieve routability, as claimed herein.

4. As per claim 3, see (2) and (3) above and Fig. 2 of Groeneveld , which teach the additional limitations of routing the cells, modifying the circuit design to produce optimized cells and minimum signal timing, placing cells by use of direct timing driven processes and iterating to optimize placement, as claimed herein.

5. As per claim 4, see (2) – (4) above, since the same rejections apply.

6. Referring to claim 5, see column 9, lines 20 – 34, which recite how rough estimates of net lengths (i.e., wiring congestion) are made, as claimed herein.

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7. Referring to claim 6, see column 11, line 66 to column 12, line 2, which show how a buffer can be added to the circuit (i.e., changing the current-handling capacity of the circuit) as claimed.

8. As per claim 7, see Fig. 2, steps 220 and 225 of Groeneveld, which teach how cells are sized to achieve the delay timing requirements, as claimed.

9. Referring to claim 8, see (2) above, as well as column 7, lines 11 – 26, which show how synthesis can be performed on the netlist to achieve electrical optimization.

10. As per claim 9, see column 8, lines 51 – 53, which cite how net weights are used to optimize the layout (i.e., wiring interconnections) as claimed herein.

11. As per claim 10, see (6) which contains the same limitations, as claimed herein.

12. Referring to claim 11, see (8) above which contains the same limitations, and thus the same rejections apply.

13. Referring to claims 19 and 20, see above, and Abstract; Fig. 1; column 20, lines 36 – 42, which cite how a computer can be used for the cell placement, as claimed herein. All the limitations claimed are thus recited above.

***Allowable Subject Matter***

14. Claims 12 – 18 are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: these claims pertain to a method for optimizing the placement of circuit elements on an IC that includes synthesis, non-direct and direct timing driven steps, and an iterative place and route process that prior art does not teach, or suggest.

***Response to Amendment***

16. Applicant's arguments filed August 15, 2003 have been fully considered but they are not persuasive. The Applicants argue that claims 1 – 20, as amended, are patentable over cited art.

17. Applicant's arguments with respect to claims 1 – 11 and 19 - 20 have been considered but are moot in view of the new ground(s) of rejection. See arguments set forth by the Examiner in the First Office Action; Groeneveld, Fig. 2 (blocks 235, 240, 245 and 250); as well as Agrawal et al (U.S. Patent No. 5,218,551), Fig. 8 and column 19, lines 3 – 33. All the limitations claimed herein of cell placement, incremental cell

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placement, placing cells using timing driven processes, and iterating the process to optimize cell placements are thus cited in the references.

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magid Y Dimyan whose telephone number is (703) 308-1354. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S Smith can be reached on (703) 308-1323. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Magid Y Dimyan  
Examiner  
Art Unit 2825

myd  
October 03, 2003

A handwritten signature in black ink, appearing to read 'Matt Smith', is written over a rectangular stamp.

MATTHEW SMITH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800